



## Workshop Manual

### SpaceFox, Space Cross, Suran, Suran Cross, Sportvan 2006 ➤

#### Communication

Edition 05.2011





## List of Workshop Manual Repair Groups

### List of Workshop Manual Repair Groups

#### Repair Group

91 - Radio, telephone, navigation system



Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.

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A large, semi-transparent watermark of the Volkswagen logo is centered on the page. The logo consists of the iconic four-pointed star inside a circle. The text "Volkswagen AG" is written in a stylized font across the top of the logo. Overlaid on the logo is the text "Protected by copyright. Copying for private use only." and "Copyright by Volkswagen AG." The entire image is set against a light gray background with a faint, repeating circular pattern.





## 91 – Radio, telephone, navigation system

### 1 Communications Systems

Communications systems include equipment like radios, antennas, loud speakers and multi-function steering wheels.

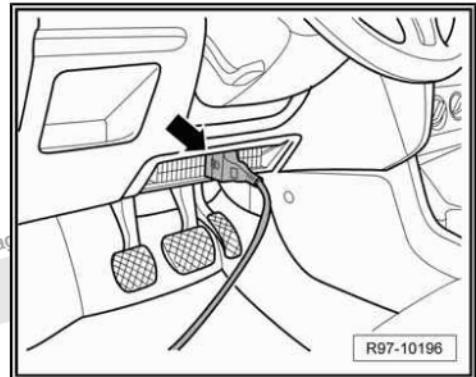
Some of this equipment may only be purchased as optional extras, therefore not all systems may be installed in any given vehicle.

It is crucial to know how the communications systems work and how to handle them correctly ⇒ Instruction manuals .

The communication systems are equipped with a self-diagnosis and troubleshooting function ⇒ [page 1](#) .

#### 1.1 Location and Indication of defects

- To locate defects, the Diagnosis, Measurement and Information System -VAS 5051- or Diagnosis, Measurement and Information System -VAS 5052- , or more recent equipment, should be used 16-pin diagnostic connector -T16- -arrow- ⇒ General information; Rep. Gr. 97 ; Cables and wiring harnesses .
- Turn the ignition on.
- Turn off all electrical components.
- Proceed by selecting the desired functions ⇒ Vehicle diagnosis, testing and information system VAS 5051.



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## 2 Radio -R-



### WARNING

*Before working on the electrical system, it is necessary to disconnect the battery earth strap of ⇒ Electrical equipment; Rep. Gr. 27 ; Starter, alternator, battery .*



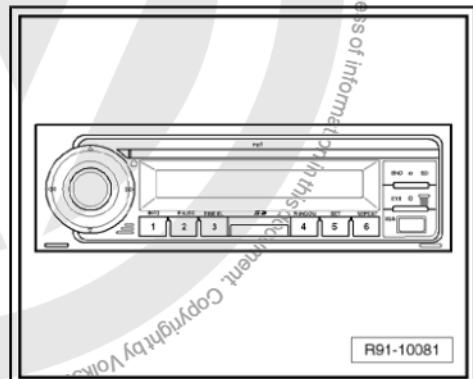
### Note

- ◆ Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery's earth strap Battery -A- .
- ◆ Safe working conditions, with regards to the electrical system, are attained by disconnecting the earth strap from the Battery -A- (interruption of electric current).
- ◆ When reconnecting the Battery -A- , check the vehicle's equipment (radio, clock, electric door locks, power windows, etc.) according to the repair manual and/or instructions for use.

## 2.1 Radio -R- - "Concept"

The Radio -R- "Concept" comprises of a radio device, the Antenna -R11- and the respective loudspeakers:

- ◆ one Front left loudspeaker for treble sounds -R20- and one Front right loudspeaker for treble sounds -R22- in each lining of column A.
- ◆ one Front left loudspeaker for bass sounds -R21- and one Front right loudspeaker for bass sounds -R23- in each front door lining.
- ◆ one Rear left loudspeaker for bass sounds -R15- and one Rear right loudspeaker for bass sounds -R17- , in each rear door lining.





## 2.1.1 Radio -R- "Concept" - Assembly overview

1 - Front left loudspeaker for treble sounds -R20- and/or Front right loudspeaker for treble sounds -R22-

- Installed in the lining of column A.
- Remove and install [⇒ page 17](#).

2 - Antenna -R11-

- Remove and install [⇒ page 22](#).

3 - Rear left loudspeaker for bass sounds -R15- and/or Rear right loudspeaker for bass sounds -R17-

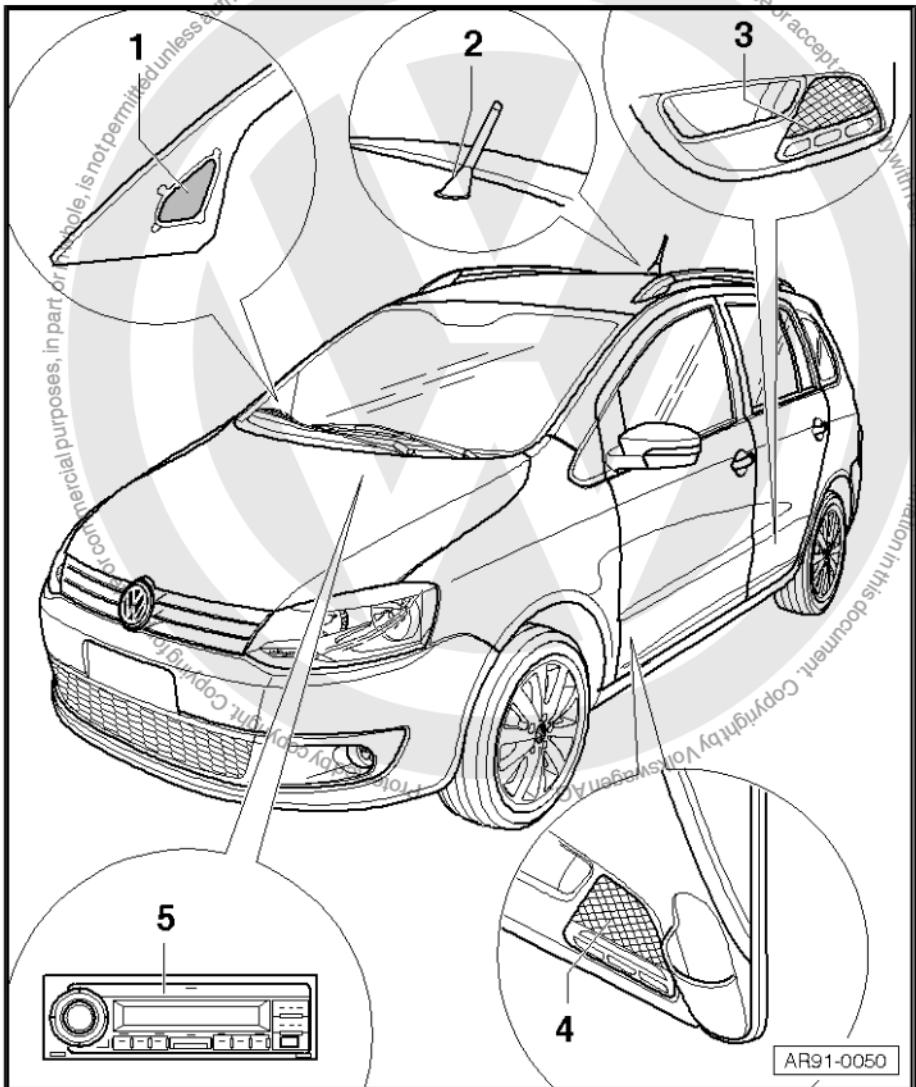
- Installed in the lining of the rear lateral interior panels or the rear doors.
- Remove and install [⇒ page 17](#).

4 - Front left loudspeaker for bass sounds -R21- and/or Front right loudspeaker for bass sounds -R23-

- Installed in the lining of the front doors.
- Remove and install [⇒ page 17](#).

5 - Radio -R- "Concept"

- Remove and install [⇒ page 3](#).
- Connector pinout [⇒ page 5](#).
- Additional information on the anti-theft system [⇒ page 5](#).

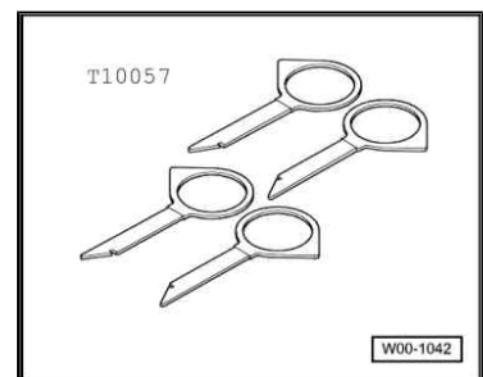


AR91-0050

## 2.1.2 Radio -R- "Concept" - Remove and install

Special tools and workshop equipment required

- ◆ Wrench -T 10057-

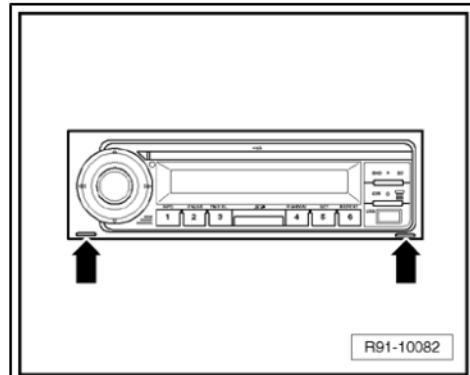


W00-1042

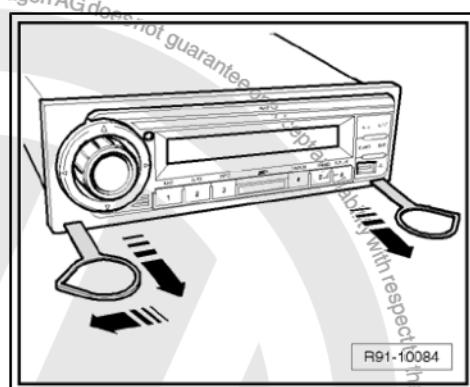


Removal:

- Turn the ignition and all electric components off and remove the key from the ignition.
- Insert the Wrench -T 10057- into the frontal inserts -arrows- of the device, according to the following instructions:



- Remove the Radio -R- "Concept" from the dashboard, pulling it out with the Wrench -T 10057- in the direction of the -arrows-.
- Slowly pull the equipment out of its housing, until the connectors at the back are accessible.
- Disconnect the connectors of the Radio -R- "Concept" and the cable of the Antenna -R11- .



- After removing the Radio -R- "Concept", remove the Wrench -T 10057- by pressing the lock -arrow-.

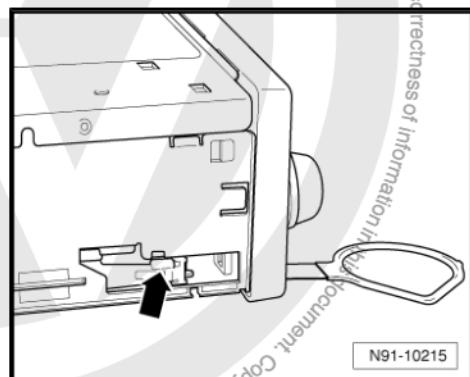
Installation:

- Connect the connectors Radio -R- "Concept" and the cable of the Antenna -R11- .
- Install the Radio -R- "Concept", by pushing it in to its housing until it is flush with the dashboard.



**WARNING**

*During installation, never press the display or the command keys, as the equipment may be damaged.*



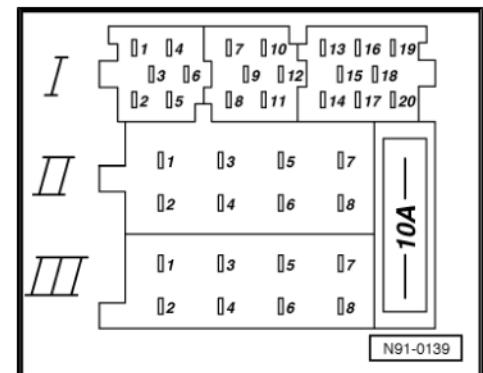
- If necessary, activate the electronic anti-theft alarm system  
[⇒ page 6](#) .



### 2.1.3 Radio -R- "Concept" - Connector pinout

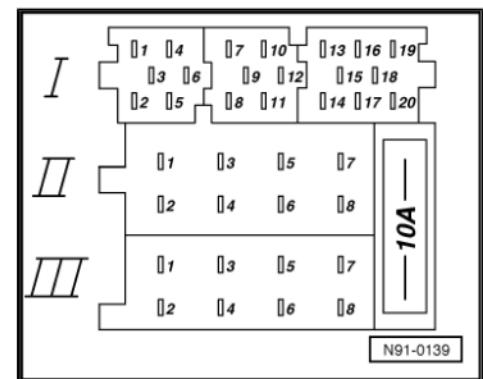
Multiple connector I, 20-pin connector -T20-

- 7 - Positive (+) telephone
- 8 - Clock (Display)
- 9 - Date (Display)
- 10 - Display
- 11 - Steering wheel controls
- 12 - Negative (-) telephone
- 16 - Amplifier (1A)
- 17 - Amplifier (100mA)
- 18 - Mass (auxiliary)
- 19 - Left (auxiliary)
- 20 - Right (auxiliary)



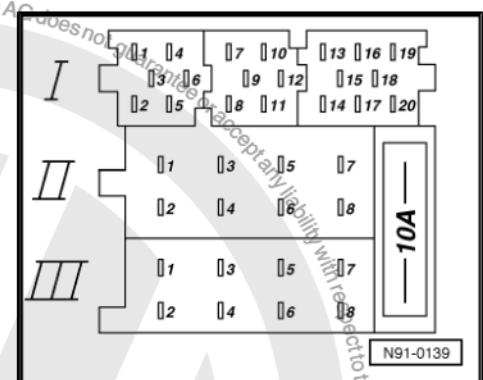
Multiple connector II, 8-pin connector -T8-

- 1 - Rear loudspeaker, right side, positive
- 2 - Rear loudspeaker, right side, negative
- 3 - Front loudspeaker, right side, positive
- 4 - Front loudspeaker, right side, negative
- 5 - Front loudspeaker, left side, positive
- 6 - Front loudspeaker, left side, negative
- 7 - Rear loudspeaker, left side, positive
- 8 - Rear loudspeaker, left side, negative



Multiple connector III, 8-pin connector -T8-

- 1 - Gala
- 2 - Mute
- 3 - Self-diagnosis/K cable
- 4 - Connection for turning on/off operations controlled by the ignition key (S contact)
- 5 - Battery (SAFE)
- 6 - Lighting (terminal 58b)
- 7 - Battery positive (terminal 30)
- 8 - Battery negative (terminal 31)



### 2.1.4 Radio -R- "Concept" - anti-theft system

The Radio -R- "Concept" is equipped with an anti-theft system.



 Note

- ◆ *Each Radio -R- "Concept" has its own code.*
- ◆ *The anti-theft system code is stored in the Radio -R- "Concept" code along with the equipment ID number ⇒ Radio Instruction Manual .*
- ◆ *For security reasons, the Radio -R- "Concept" card should not be kept inside the vehicle. If necessary, request the code from the client.*
- ◆ *If the Radio -R- "Concept" is replaced, activate the anti-theft code and communicate the new number to the client.*

The anti-theft system starts operating and blocks the radio whenever:

- ◆ A Battery -A- is disconnected.
- ◆ The Radio -R- "Concept" is removed from the vehicle.

#### 2.1.5 Radio -R- "Concept" - actuate anti-theft system



**WARNING**

*If the anti-theft code is not known, it may be attained through the ELSA system (Specific vehicle information), or through the Diagnosis, Measurement and Information System -VAS 5051- or Diagnosis, Measurement and Information System -VAS 5052- or more recent equipment, using the chassis number Radio -R- "Concept" which is located in the device together with the chassis number of the respective vehicle.*

- Connect the Radio -R- "Concept".

The digital display will automatically indicate "SAFE" and then, "1000" on its observation hole.

- By using the station preset keys 1 to 4, insert the Radio -R- "Concept" code along with the equipment ID number ⇒ Radio Instruction Manual . With key 1, select the first code digit; with key 2, the second digit, and so forth.
- Then, press the  key (toward the right), and keep it pressed until an audio signal is heard. The anti-theft coding is now deactivated, and the equipment is in operation and turned on.

 Note

*If an incorrect code number is inserted when activating the electronic anti-theft system, the word "SAFE" will blink on the display, followed by the indication "1000". At this moment, it is possible to repeat the entire operation. If an incorrect code number is entered again, the equipment will be blocked for approximately one hour, which means that it will not be operational. The blocking is indicated on the left side of the display with the word "SAFE" (permanent) and a number "2" (small). With the key inserted in the ignition and the equipment connected to the vehicle, after approximately one hour, the word will disappear and it will be possible to reenter the code. The "two attempts, one hour blocked" cycle will continue.*



### 3 CD Player -R89-



#### WARNING

*Before working on the electrical system, it is necessary to disconnect the battery earth strap of ⇒ Electrical equipment; Rep. Gr. 27; Starter, alternator, battery.*



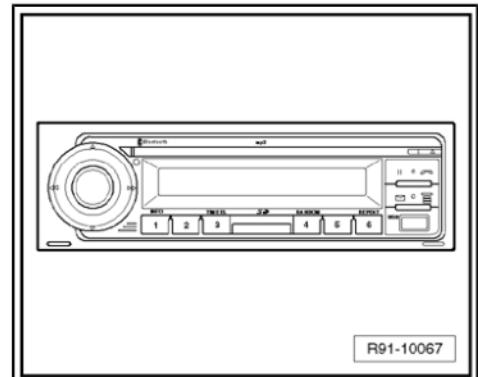
#### Note

- ◆ Remove any CD from the device ⇒ *Radio Instruction Manual*
- ◆ Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery's earth strap **Battery -A-**
- ◆ Safe working conditions, with regards to the electrical system, are attained by disconnecting the earth strap from the **Battery -A-** (interruption of electrical current)
- ◆ When reconnecting the **Battery -A-**, check the vehicle's equipment (radio, clock, electric door locks, power windows, etc.) according to the repair manual and/or instructions for use

#### 3.1 "CD player" -R89- "1 Din MID"

The "CD player" -R89- comprises of a radio device, the Antenna -R11- and the respective loudspeakers:

- ◆ one Front left loudspeaker for treble sounds -R20- and one Front right loudspeaker for treble sounds -R22- in each lining of column A.
- ◆ one Front left loudspeaker for bass sounds -R21- and one Front right loudspeaker for bass sounds -R23- in each front door lining.
- ◆ one Rear left loudspeaker for bass sounds -R15- and one Rear right loudspeaker for bass sounds -R17- , in each rear door lining.



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### 3.1.1 "CD player" -R89- "1 Din MID" - Assembly overview

1 - Front left loudspeaker for treble sounds -R20- and/or Front right loudspeaker for treble sounds -R22-

- Installed in the lining of column A.
- Remove and install [⇒ page 17](#).

2 - Antenna -R11-

- Remove and install [⇒ page 22](#).

3 - Rear left loudspeaker for bass sounds -R15- and/or Rear right loudspeaker for bass sounds -R17-

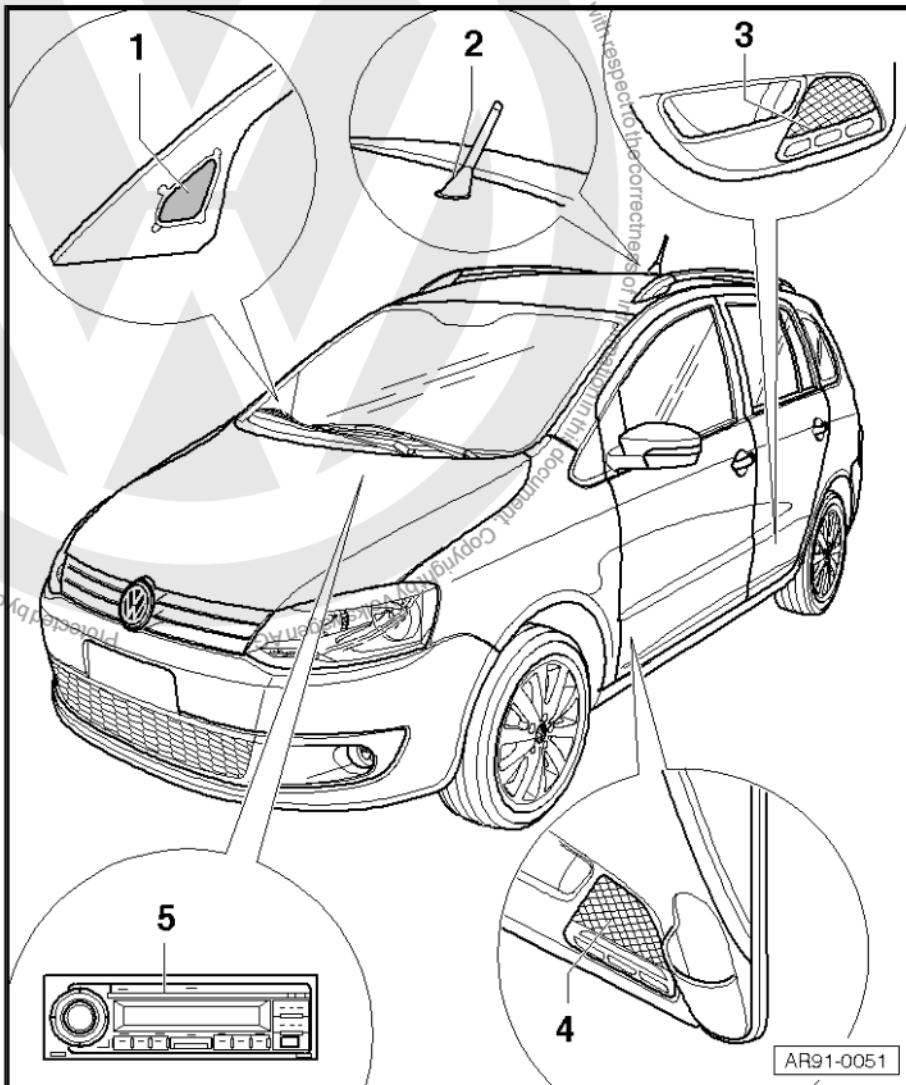
- Installed in the lining of the rear lateral interior panels or the rear doors
- Remove and install [⇒ page 17](#).

4 - Front left loudspeaker for bass sounds -R21- and/or Front right loudspeaker for bass sounds -R23-

- Installed in the front door lining
- Remove and install [⇒ page 17](#).

5 - "CD player" -R89- "1 Din MID"

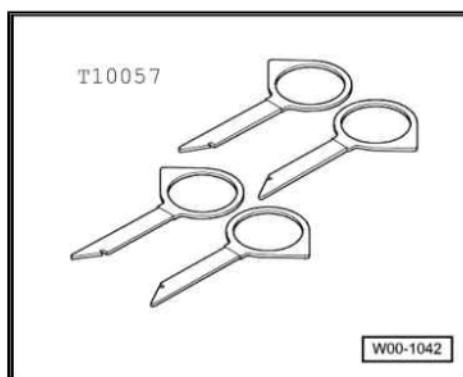
- Remove and install [⇒ page 8](#).
- Connector pinout [⇒ page 10](#).
- Additional information on the anti-theft system [⇒ page 10](#).



### 3.1.2 "CD player" -R89- "1 Din MID" - Remove and install

Special tools and workshop equipment required

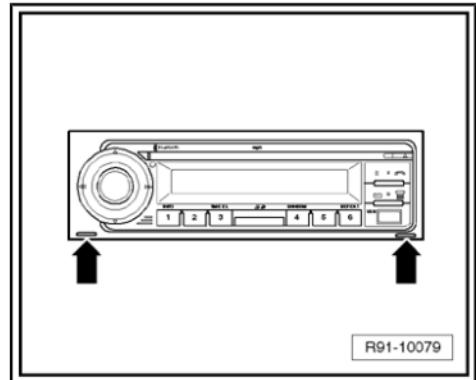
- ◆ Wrench -T 10057-



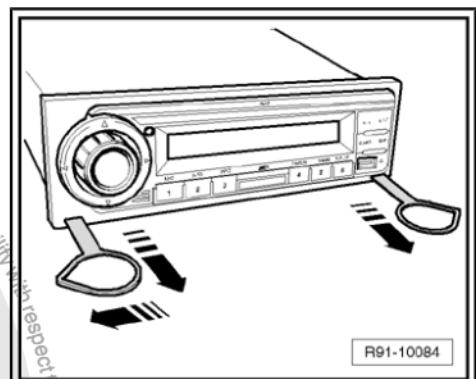


### Removal:

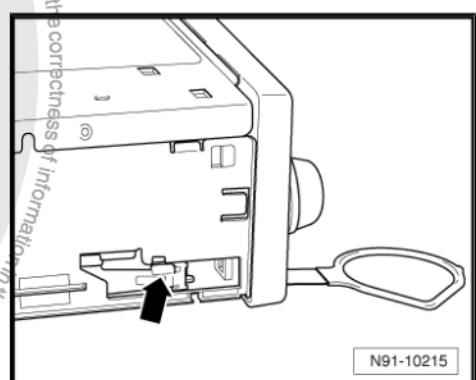
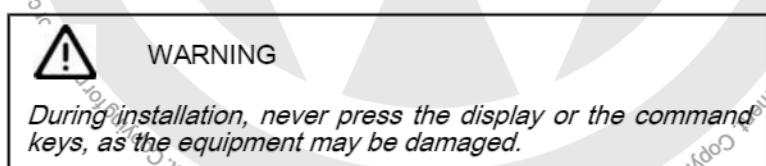
- Turn the ignition and all electric components off and remove the key from the ignition.
- Remove any CD from the device ➤ Radio Instruction Manual .
- Insert the Wrench -T 10057- into the frontal inserts -arrows- of the device, according to the following instructions:



- Remove the "CD player" -R89- "1 Din MID" from the dashboard, pulling it out with the Wrench -T 10057- in the direction of the -arrows.
- Slowly pull the "CD player" -R89- "1 Din MID" out of its housing, until the connectors at the back are accessible.
- Disconnect the connectors of the "CD player" -R89- "1 Din MID" and the cable of the Antenna -R11- .
- After removing the "CD player" -R89- "1 Din MID", remove the Wrench -T 10057- by pressing the lock -arrow-.



- Connect the connectors "CD player" -R89- "1 Din MID" and the cable of the Antenna -R11- .
- Install the "CD player" -R89- "1 Din MID", by pushing it in to its housing until it is flush with the dashboard.



- If necessary, activate the electronic anti-theft alarm system ➤ [page 10](#) .



### 3.1.3 "CD player" -R89- "1 Din MID" - Connector pinout

Multiple connector I, 20-pin connector -T20-

7 - Positive (+) telephone

8 - Clock (Display)

9 - Date (Display)

10 - Display

11 - Steering wheel controls

12 - Negative (-) telephone

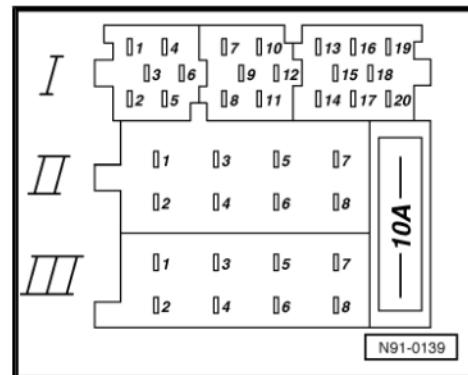
16 - Amplifier (1A)

17 - Amplifier (100mA)

18 - Mass (auxiliary)

19 - Left (auxiliary)

20 - Right (auxiliary)



Multiple connector II, 8-pin connector -T8-

1 - Rear loudspeaker, right side, positive

2 - Rear loudspeaker, right side, negative

3 - Front loudspeaker, right side, positive

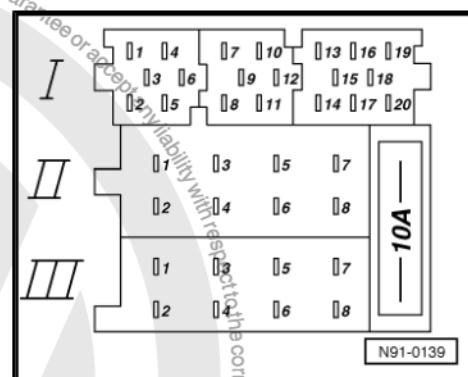
4 - Front loudspeaker, right side, negative

5 - Front loudspeaker, left side, positive

6 - Front loudspeaker, left side, negative

7 - Rear loudspeaker, left side, positive

8 - Rear loudspeaker, left side, negative



Multiple connector III, 8-pin connector -T8-

1 - Gala

2 - Mute

3 - Self-diagnosis/K cable

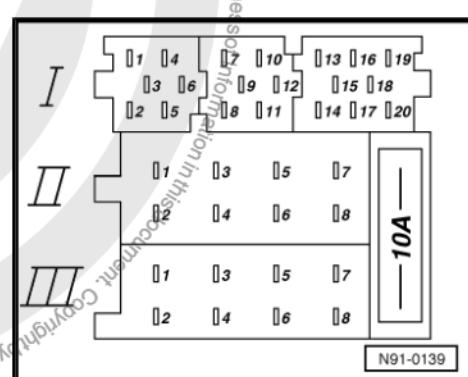
4 - Connection for turning on/off operations controlled by the ignition key (S contact)

5 - Battery (SAFE)

6 - Lighting (terminal 58b)

7 - Battery positive (terminal 30)

8 - Battery negative (terminal 31)



### 3.1.4 "CD player" -R89- "1 Din MID" - anti-theft system

The "CD player" -R89- "1 Din MID" is equipped with an anti-theft system.



Note

- ◆ Each "CD player" -R89- "1 Din MID" has its own code.
- ◆ The anti-theft system code is stored in the "CD player" -R89- "1 Din MID" code along with the equipment ID number ⇒ Radio Instruction Manual .
- ◆ For security reasons, the "CD player" -R89- "1 Din MID" card should not be kept inside the vehicle. If necessary, request the code from the client.
- ◆ If the "CD player" -R89- "1 Din MID" is replaced, activate the anti-theft code and communicate the new number to the client.

The anti-theft system starts operating and blocks the radio whenever:

- ◆ and Battery -A- is disconnected.
- ◆ the "CD player" -R89- "1 Din MID" is removed from the vehicle.

### 3.1.5 "CD player" -R89- "1 Din MID" - actuate anti-theft system



**WARNING**

*If the anti-theft code is not known, it may be attained through the ELSA system (Specific vehicle information), or through the Diagnosis, Measurement and Information System -VAS 5051A/52- using the chassis number from the "CD player" -R89- "1 Din MID" which is located in the device together with the chassis number of the respective vehicle.*

- Connect the "CD player" -R89- "1 Din MID".

The digital display will automatically indicate "SAFE" and then, "1000" on its observation hole.

- By using the station preset keys 1 to 4, insert the "CD player" -R89- "1 Din MID" code along with the equipment ID number ⇒ Radio Instruction Manual . With key 1, select the first code digit; with key 2, the second digit, and so forth.
- Then, press the  key (toward the right), and keep it pressed until an audio signal is heard. The anti-theft coding is now deactivated, and the equipment is in operation and turned on.



Note

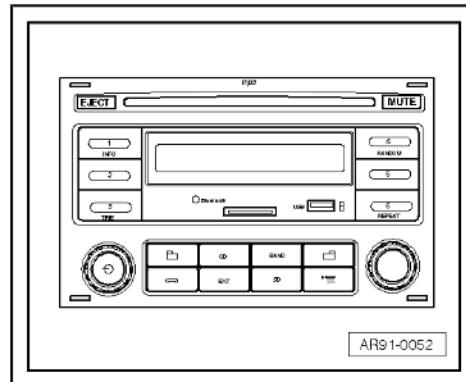
*If an incorrect code number is inserted when activating the electronic anti-theft system, the word "SAFE" will blink on the display, followed by the indication "1000". At this moment, it is possible to repeat the entire operation. If an incorrect code number is entered again, the equipment will be blocked for approximately one hour, which means that it will not be operational. The blocking is indicated on the left side of the display with the word "SAFE" (permanent) and a number "2" (small). With the key inserted in the ignition and the equipment connected to the vehicle, after approximately one hour, the word will disappear and it will be possible to reenter the code. The "two attempts, one hour blocked" cycle will continue.*



### 3.2 Radio -R- "2 Din MID"

The Radio -R- "2 Din MID", comprises of a radio device, the Antenna -R11- and the respective loudspeakers:

- ◆ one Front left loudspeaker for treble sounds -R20- and one Front right loudspeaker for treble sounds -R22- in each lining of column A.
- ◆ one Front left loudspeaker for bass sounds -R21- and one Front right loudspeaker for bass sounds -R23- in each front door lining.
- ◆ one Rear left loudspeaker for bass sounds -R15- and one Rear right loudspeaker for bass sounds -R17- , in each rear door lining.



#### 3.2.1 Radio -R- "2 Din MID" - Assembly overview

1 - Front left loudspeaker for treble sounds -R20- and/or Front right loudspeaker for treble sounds -R22-

- Installed in the lining of column A.
- Remove and install  
[⇒ page 17](#).

2 - Antenna -R11-

- Remove and install  
[⇒ page 22](#).

3 - Rear left loudspeaker for bass sounds -R15- and/or Rear right loudspeaker for bass sounds -R17-

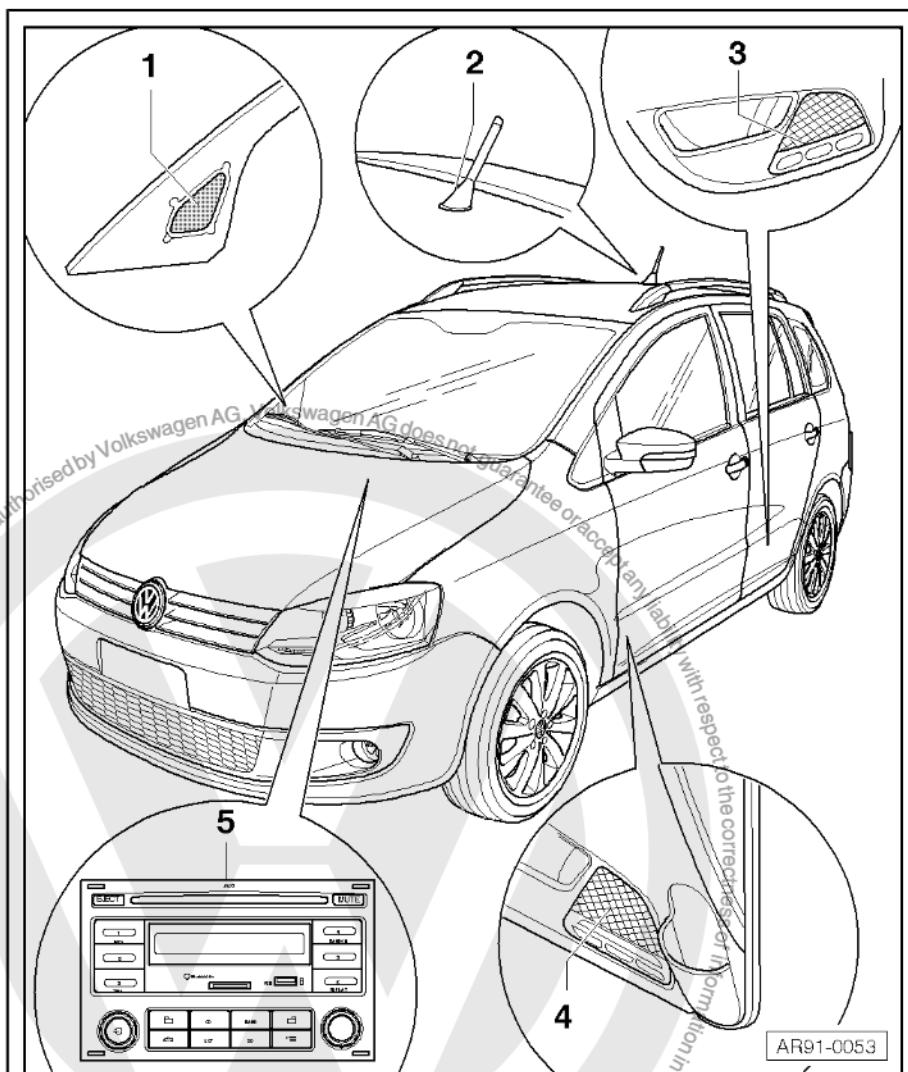
- Installed in the lining of the rear lateral interior panels or the rear doors.
- Remove and install  
[⇒ page 17](#).

4 - Front left loudspeaker for bass sounds -R21- and/or Front right loudspeaker for bass sounds -R23-

- Installed in the lining of the front doors.
- Remove and install  
[⇒ page 17](#).

5 - Radio -R- "2 Din MID"

- Remove and install  
[⇒ page 12](#)
- Connector pinout  
[⇒ page 14](#)
- Additional information on the anti-theft system [⇒ page 15](#)

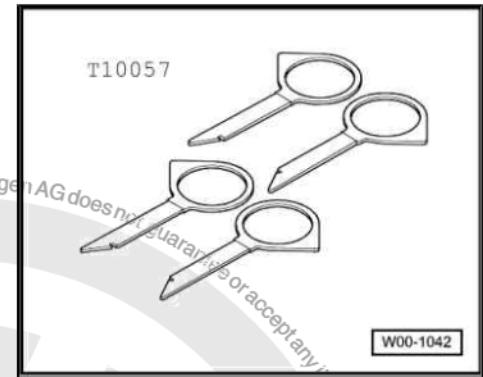


#### 3.2.2 Radio -R- "2 Din MID" - Remove and install

Special tools and workshop equipment required

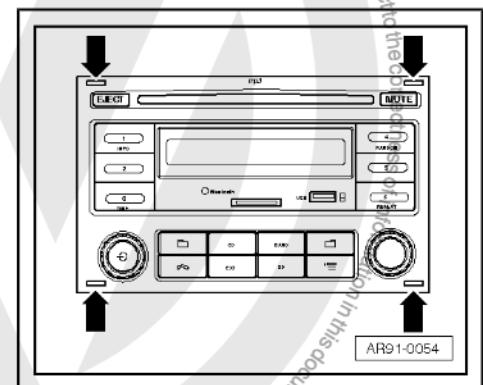


◆ Wrench -T 10057-

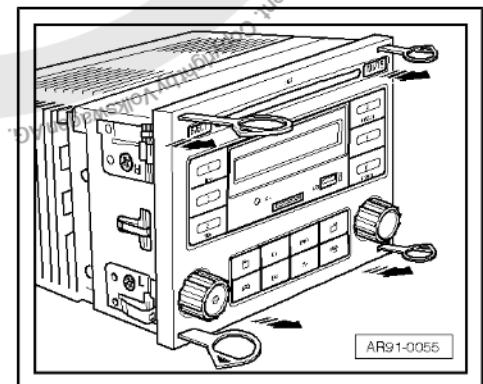


Removal:

- Turn the ignition and all electric components off and remove the key from the ignition.
- Insert the Wrench -T 10057- into the frontal inserts -arrows- of the device, according to the following instructions:



- Remove the Radio -R- "2 Din MID" from the dashboard, pulling it out with the Wrench -T 10057- in the direction of the -arrows-.
- Slowly pull the equipment out of its housing, until the connectors at the back are accessible.
- Disconnect the connectors of the Radio -R- "2 Din MID" and the cable of the Antenna -R11- .





- After removing the Radio -R- "2 Din MID", remove the Keys - T 10057- by pressing the lock -arrow-.

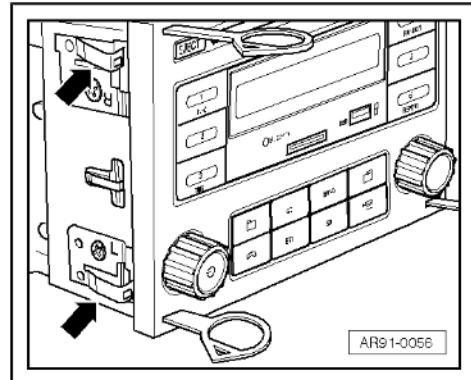
Installation:

- Connect the connectors Radio -R- "2 Din MID" and the cable of the Antenna -R11- .
- Install the Radio -R- "2 Din MID", by pushing it in to its housing until it is flush with the dashboard.



#### WARNING

*During installation, never press the display or the command keys, as the equipment may be damaged.*

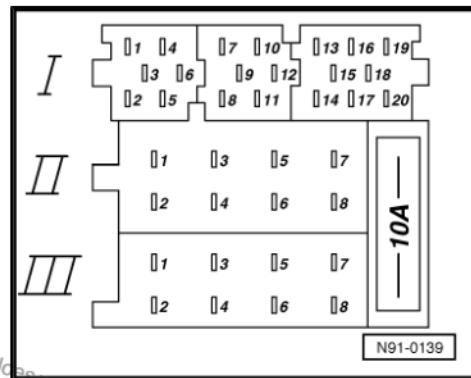


- If necessary, activate the electronic anti-theft alarm system [page 15](#) .

### 3.2.3 Radio -R- "2 Din MID" - Connector pin-out

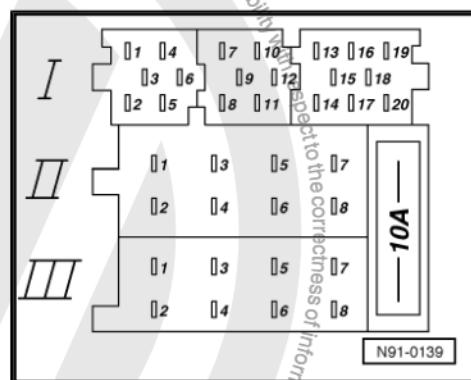
Multiple connector I, 20-pin connector -T20-

- 7 - Positive (+) telephone
- 8 - Clock (Display)
- 9 - Date (Display)
- 10 - Display
- 11 - Steering wheel controls
- 12 - Negative (-) telephone
- 16 - Amplifier (1A)
- 17 - Amplifier (100mA)
- 18 - Mass (auxiliary)
- 19 - Left (auxiliary)
- 20 - Right (auxiliary)



Multiple connector II, 8-pin connector -T8-

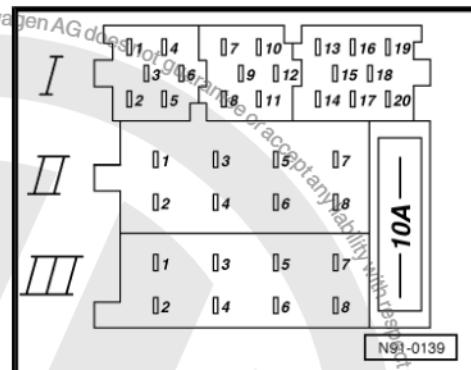
- 1 - Rear loudspeaker, right side, positive
- 2 - Rear loudspeaker, right side, negative
- 3 - Front loudspeaker, right side, positive
- 4 - Front loudspeaker, right side, negative
- 5 - Front loudspeaker, left side, positive
- 6 - Front loudspeaker, left side, negative
- 7 - Rear loudspeaker, left side, positive
- 8 - Rear loudspeaker, left side, negative





#### Multiple connector III, 8-pin connector -T8-

- 1 - Gala
- 2 - Mute
- 3 - Self-diagnosis/K cable
- 4 - Connection for turning on/off operations controlled by the ignition key (S contact)
- 5 - Battery (SAFE)
- 6 - Lighting (terminal 58b)
- 7 - Battery positive (terminal 30)
- 8 - Battery negative (terminal 31)



#### 3.2.4 Radio -R- "2 Din MID" - anti-theft system

The Radio -R- "2 Din MID" is equipped with an anti-theft system.



##### Note

- ◆ Each Radio -R- "2 Din MID" has its own code.
- ◆ The anti-theft system code is stored in the Radio -R- "2 Din MID" code along with the equipment ID number ⇒ Radio Instruction Manual .
- ◆ For security reasons, the Radio -R- "2 Din MID" card should not be kept inside the vehicle. If necessary, request the code from the client.
- ◆ If the Radio -R- "2 Din MID" is replaced, activate the anti-theft code and communicate the new number to the client.

The anti-theft system starts operating and blocks the radio whenever:

- ◆ A Battery -A- is disconnected.
- ◆ The Radio -R- "2 Din MID" is removed from the vehicle.

#### 3.2.5 Radio -R- "2 Din MID" - actuate anti-theft system



##### WARNING

If the anti-theft code is not known, it may be attained through the ELSA system (Specific vehicle information), or through the Diagnosis, Measurement and Information System -VAS 5051- or Diagnosis, Measurement and Information System -VAS 5052- or more recent equipment, using the chassis number Radio -R- "2 Din MID" which is located in the device together with the chassis number of the respective vehicle.

- Connect the Radio -R- "2 Din MID".

The digital display will automatically indicate "SAFE" and then, "1000" on its observation hole.

- By using the station preset keys 1 to 4, insert the Radio -R- "2 Din MID" code along with the equipment ID number ⇒ Radio Instruction Manual . With key 1, select the first code digit; with key 2, the second digit, and so forth.



- Then, press the 11 button **[+]**, keep it pressed until an audio signal is heard. The anti-theft coding is now deactivated, and the equipment is in operation and turned on.



#### Note

*If an incorrect code number is inserted when activating the electronic anti-theft system, the word "SAFE" will blink on the display, followed by the indication "1000". At this moment, it is possible to repeat the entire operation. If an incorrect code number is entered again, the equipment will be blocked for approximately one hour, which means that it will not be operational. The blocking is indicated on the left side of the display with the word "SAFE" (permanent) and a number "2" (small). With the key inserted in the ignition and the equipment connected to the vehicle, after approximately one hour, the word will disappear and it will be possible to reenter the code. The "two attempts, one hour blocked" cycle will continue.*



## 4 Loudspeakers

4.1 Front left loudspeaker for bass sounds - R21- ; Front right loudspeaker for bass sounds -R23- and/or Rear left loudspeaker for bass sounds -R15- ; Rear right loudspeaker for bass sounds -R17- - replace

### 4.1.1 Removal



*Removing and installing loudspeakers is identical on both sides; the procedure below refers only to one of the loudspeakers.*

To replace a speaker, the door or lateral panel lining must be removed first.

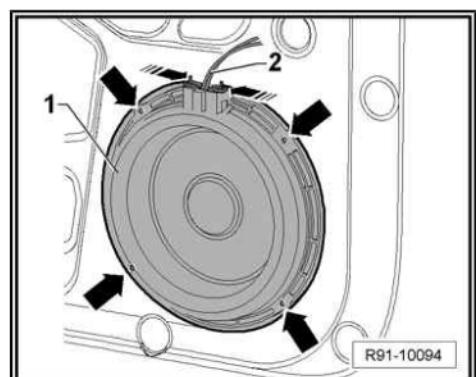
- Remove the front door and/or rear door lining ⇒ Body - internal mountings; Rep. Gr. 70 ; Lining / Insulation .
- Pull off connector -2- from speaker -1-.
- Pierce the rivets -arrows- with an appropriate drill and remove the loudspeaker -1-.



#### WARNING

*All filings resulting from the drilling must be removed. Otherwise corrosion damages can occur.*

*If the rivet drilling caused damage to the paint work, this damage must be remedied immediately.*



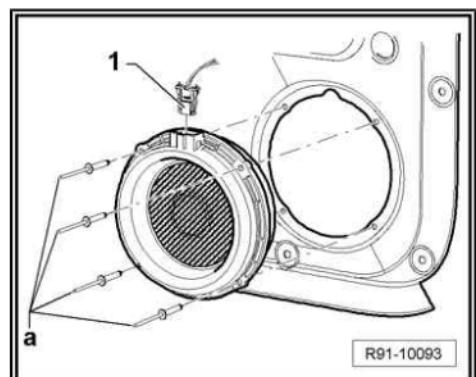
### 4.1.2 Installation

Install by inverting the removal sequence, paying attention to the following:

- Fasten the new speaker with rivets -nd- of corresponding length and diameter (observe the replacement part number ⇒ Electronic Parts Catalogue (ETKA) ).
- Push on connector -1- from speaker.



*When installing the door lining, make sure the rubber ring is placed between the lining and the speaker.*



### 4.2 Front left loudspeaker for treble sounds -R20- and/or Front right loudspeaker for

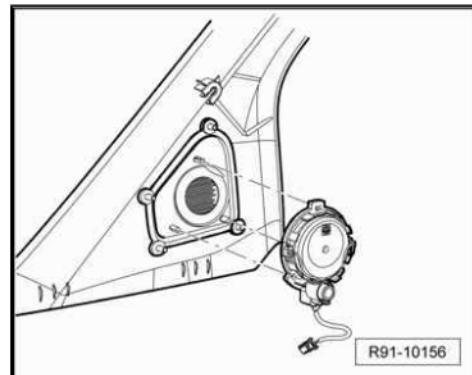


## treble sounds -R22- (front tweeter) - replace

The Front left loudspeaker for treble sounds -R20- and/or the Front right loudspeaker for treble sounds -R22- are integrated respectively into the left and right linings column A.

### 4.2.1 Removal

- Remove the lining of column A ⇒ Body - internal mountings;  
Rep. Gr. 70 ; Lining / Insulation .
- Disconnect the loud speaker connector, and remove it.



### 4.2.2 Installation

Installation is carried out in the reverse order of removal.





## 5 Multifunction steering wheel



### WARNING

*Before working on the electrical system, it is necessary to disconnect the battery earth strap of ⇒ Electrical equipment; Rep. Gr. 27; Starter, alternator, battery.*



### Note

- ◆ Check whether the vehicle has a coded radio. If so, request the anti-theft code before disconnecting the Battery's earth strap Battery -A- .
- ◆ Safe working conditions, with regards to the electrical system, are attained by disconnecting the earth strap from the Battery -A- (interruption of electric current).
- ◆ When reconnecting the Battery -A- check the vehicle's equipment (radio, clock, electric door locks, power windows, etc.) according to the repair manual and/or instructions for use.

### 5.1 Multifunction steering wheel - general information

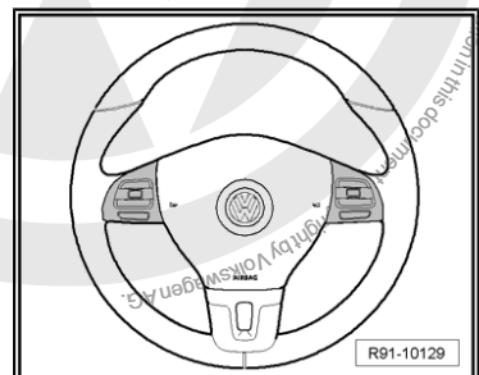
The multifunction steering wheel enables control over some radio, telephone and interactive system functions through the command keys on the wheel.

It is crucial to know how the communications systems work and how to handle them correctly ⇒ Instruction manuals .

The multifunction steering wheel is equipped with a self-diagnosis system.

Troubleshooting and indication of defects:

For troubleshooting ⇒ [page 1](#) .



R91-10129



## 5.2 Multifunction Steering Wheel - general overview of assembly

1 - Multifunction steering wheel

2 - Multifunction controls on the right side of the steering wheel -E441-

- Remove and install  
[⇒ page 20](#).

3 - Screw

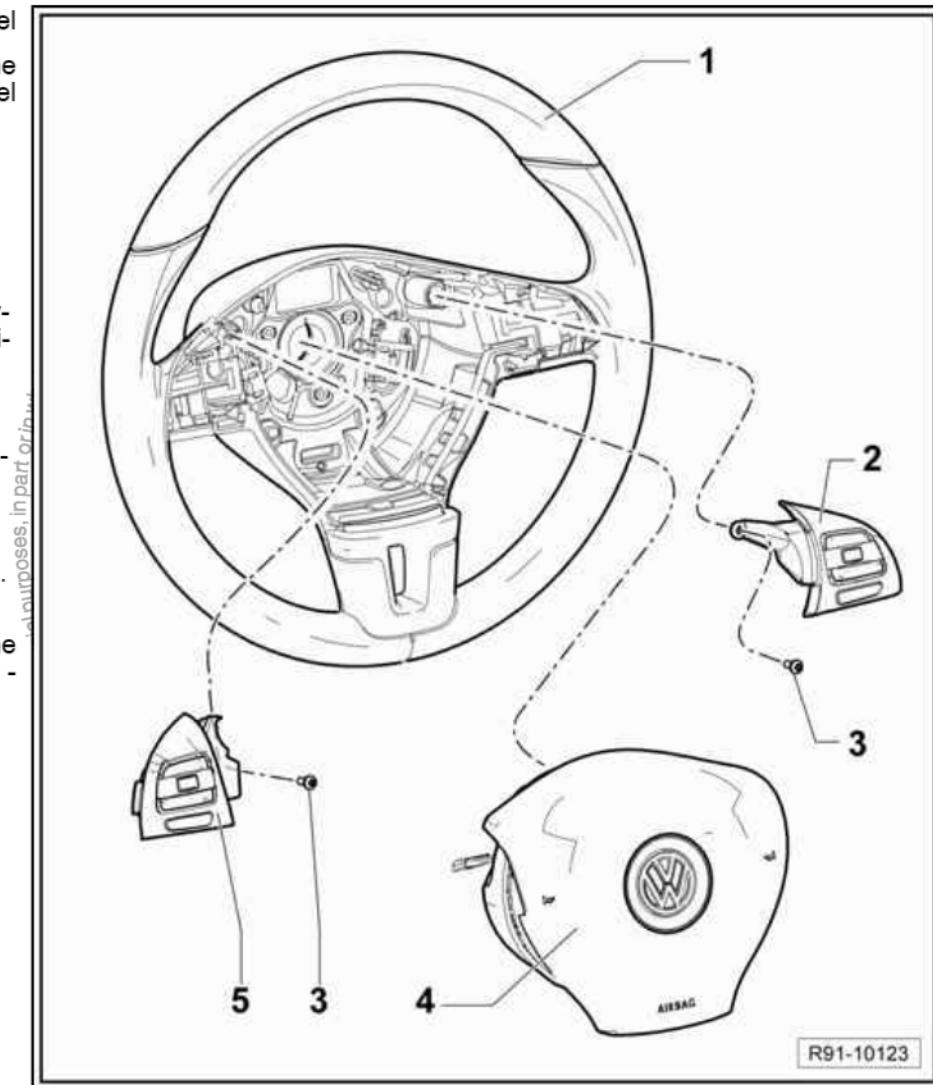
- 2 units.

4 - Ignition device for the driver's airbag -N95- or Horn activator -H-

- Remove and install ⇒  
Body - internal mountings; Rep. Gr. 69 ; Occupants' protection .
- Remove and install ⇒  
Running gear, ??  
axles, ??steering; Rep. Gr. 48 ; Steering .

5 - Multifunction controls on the left side of the steering wheel -E440-

- Control unit on the steering wheel Control unit on the steering wheel -E221- .
- Remove and install  
[⇒ page 20](#) .



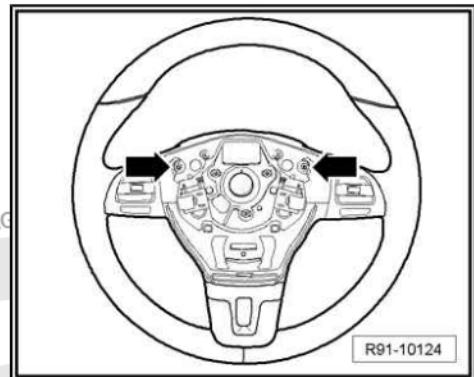
## 5.3 Control buttons - removal and installation

### 5.3.1 Removal

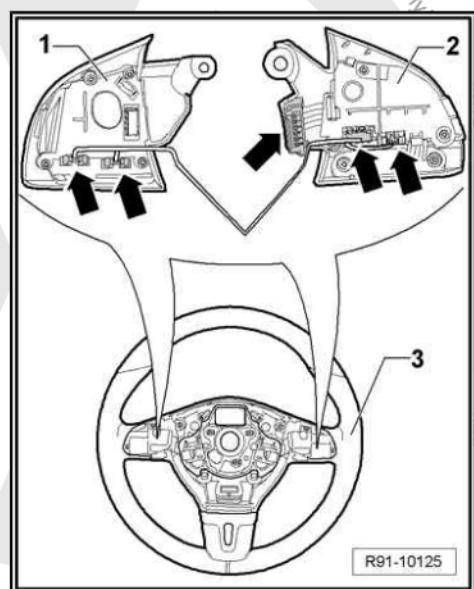
- Turn the ignition and all electric components off and remove the key from the ignition.
- Disconnect the Battery -A- ⇒ Electrical equipment; Rep. Gr. 27 ; Starter, alternator, battery .
- Remove the Ignition device for the driver's airbag -N95- ⇒  
Body - internal mountings; Rep. Gr. 69 ; Occupants' protection or remove the Horn activator -H- ⇒ Running gear, ??axles, ?? steering; Rep. Gr. 48 ; Steering .



- Remove the attaching screws -arrows- from the control buttons.



- Pull off connectors -arrows- for the Multifunction controls on the right side of the steering wheel -E441--1- and Multifunction controls on the left side of the steering wheel -E440- -2- and remove them from the steering wheel -3-.



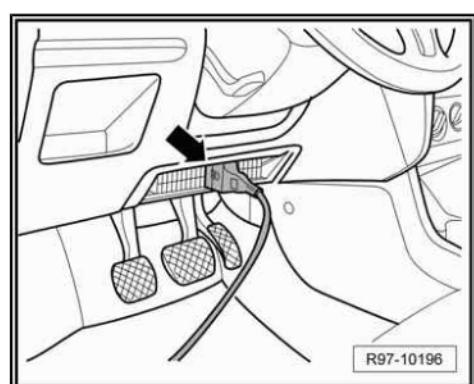
### 5.3.2 Installation

Installation is carried out in the reverse order of removal.

## 5.4 Multifunction steering wheel - adapt

To adapt, use the Diagnosis, Measurement and Information System ⇒ General information; Rep. Gr. 97 ; Cables and wiring harnesses on the 16-pin diagnostic connector -T16- .

- Turn the ignition on.
- Turn off all electrical components.
- Proceed by selecting the desired functions ⇒ Vehicle diagnosis, testing and information system VAS 5051.





## 6 Antenna system

### 6.1 Antenna -R11-



#### Note

*The amplifier for the roof antenna is installed on the antenna base*

1 - Antenna rod

2 - Antenna base

- Remove and install  
⇒ [page 22](#) .

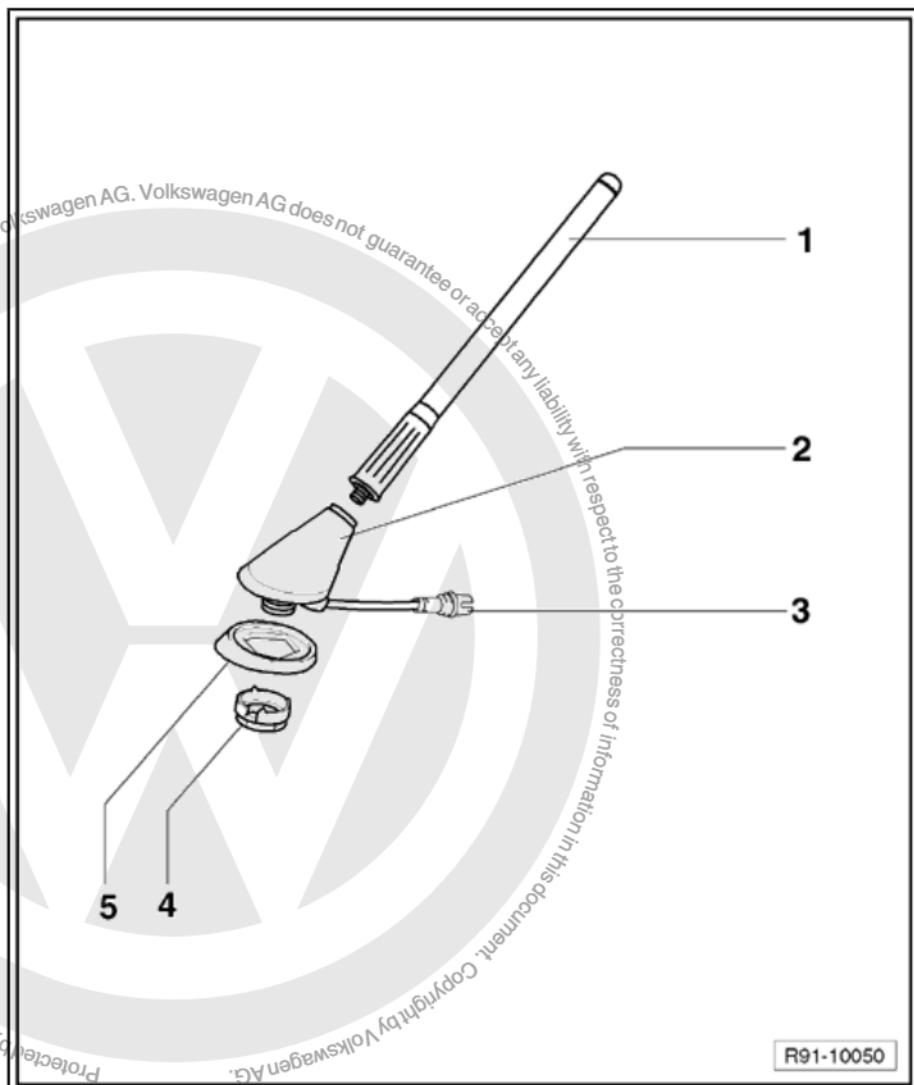
3 - Antenna cable

- From the roof antenna to the center front console.

4 - Hex nut with toothed washer

- The hex nut is attached to the toothed washer by a plastic ring.
- Apply contact grease to the inner part of the roof, to the support area of the toothed washer.

5 - Gasket

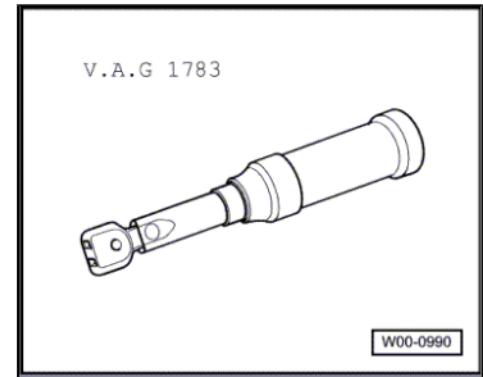


### 6.2 Antenna -R11- - Remove and install

Special tools and workshop equipment required

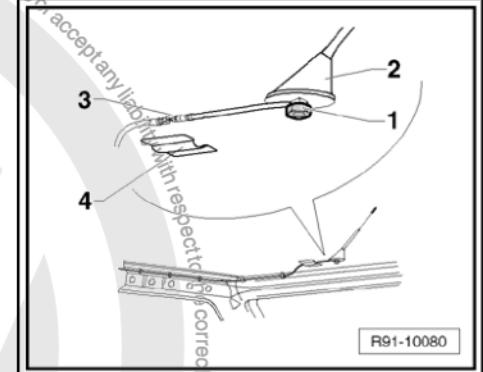


- ◆ Torque wrench 2 to 10 Nm -VAG 1783-



### 6.2.1 Removal

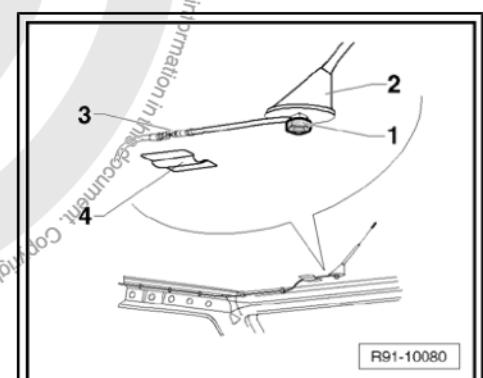
- Unslot the linings from column B ⇒ Body - internal mountings; Rep. Gr. 70 ; Lining / Insulation .
- Remove the overhead safety handles ⇒ Body - internal mountings; Rep. Gr. 68 ; Internal equipment .
- Remove rear reading lights ⇒ Electrical equipment; Rep. Gr. 96 ; Switches, lights and internal bulbs, alarm .
- Remove the linings from column C ⇒ Body - internal mountings; Rep. Gr. 70 ; Lining / Insulation .
- Remove the fastening clamps ⇒ Body - internal mountings; Rep. Gr. 70 ; Lining / Insulation .
- Pull away the pre-molded lining from the rear ceiling ⇒ Body - internal mountings; Rep. Gr. 70 ; Lining / Insulation .
- Remove the adhesive tape -4-, disconnect the antenna cable -3- and release the toothed nut -1-.
- Remove the antenna -2-.



### 6.2.2 Installation

Install by inverting the removal sequence, paying attention to the following:

- Tighten the toothed nut -1- with a torque of 6 Nm.





## 7 Interference suppression measures

Most electrical components in the vehicle are equipped with interference suppressors for improved radio operation.

In vehicles with radios, or prepared for radio installation, interference from the following components is also suppressed:

- ◆ Radiator fan -V7- .
- ◆ Windshield wiper motor -V- .
- ◆ Rear windshield wiper motor -V12- .

Additional earth connections in vehicles with radios or prepared for radio installation:

- ◆ Left side, wheel arch bonding cable, in the engine compartment.

05.11

